DOCUMENT RESUME

ED 283 880 TM 870 420

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TITLE Evaluating Psychosocial Classroom Environments.
PUB DATE Apr 87
NOTE 41p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Classroom Environment; Education Courses; Education Majors; Elementary Education; Elementary School Teachers; Factor Structure; Foreign Countries; Higher Education; *Preservice Teacher Education; Questionnaires; *Rating Scales; *Student Reaction; Teacher Student Relationship; *Test Construction; *Test Validity
IDENTIFIERS *Inventory of University Classroom Environment; Spain

ABSTRACT

A rating scale was designed to measure college classroom climate in Primary Teacher Training Colleges in Spain, as well as to describe and compare college classroom environments. Data were gathered from 33 classes of students training to be public or private primary school teachers at colleges in Sevilla and Huelva. Participant observation and interviews were used to generate 688 statements reflecting students' perceptions of the educational climate. Based on the research literature and judgments categorizing the statements, 14 dimensions were then defined. Further pretesting, factor analysis, cluster analysis, and judgments by faculty and students resulted in the 49-items Inventory of University Classroom Environment (IUCE), containing seven dimensions; cohesiveness, satisfaction, personalization, task orientation, innovation, evaluation, and classroom management. Both an idealized and a real version were developed. Internal consistency reliability estimates were acceptable for each subscale, ranging from .7768 to .8349. Intercorrelations, analysis of variance between the classrooms, and stepwise discriminant analysis were also performed. It was concluded that the instrument's validity was supported with respect to test reliability, discriminant validity, and ability to differentiate between classrooms and among students. These results could be used to improve teacher training (The IUCE is appended). (GDC)

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EVALUATING PSYCHOSOCIAL CLASSROOM ENVIRONMENTS

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Paper presented at the annual meeting of the American Educational Research Association , Washington , D.C. , April 1987

TM 870 420

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INTRODUCTION

Background

Two Spanish studies (Gimeno and Fernández, 1980 , and Vicente, 1981) have approached the problems of Primary Teacher Training Colleges in Spain . The topic of the learning environment deserved special attention in Gimeno and Fernández's work (1980) , to the extent that they dedicated a chapter to it , with three main ideas : human relationships , the role of the student , and the motivation system . As the research technique used was the questionnaire , and this questionnaire included a plurality of dimensions , when they referred to the learning climate , they did not distinguish the spatial limits of the classroom or school environment . In the research directed by Vicente (1981) , there is no specific allusion to the climate as a dimension of study , although there is reflection on related concepts such as vocation , professionalization , space , etc.

In the field work carried out by Varela and Ortega (1984) on Primary Teacher Training students in the University of Madrid district, there are aspects which incite our reflection. Now we shall only indicate one fact within the epigraph the authors entitle Educational Relationship. When they asked the students what degree of participation they had in academic activities , 96 % said they did not enter into " the organization of the education received " (p.104). We assume the classroom learning climate could be different if the students had the chance to make decisions on the direction of their own learning , and the teacher managed the classroom according to different teaching methods . Our task , then, should consist of selecting those dimensions of classroom environment that predict " something desirable " for students of Primary Teacher Training Colleges .

Related Studies

Research on the environment at the University level has paid more attention to the social milieu and the organizational context or environment than to the classroom learning environment . However , there are studies which have sought predictors of students' performance , satisfaction and participation based on other psychosocial theories (Lincoln, et al., 1983), systems of adjusting students' needs to university instructional

and organizational characteristics have been used (Kaplan, 1980; Bare ,1983) and researchers have even studied sources of dissatisfaction with enviroment factors shown by teachers (Boberg and Blackburn , 1983).

One of the closest studies to our present one is that of Tregust and Fraser (1985). Their research developed a new instrument for measuring the classroom environment at the College level , and was entitled " College and University Classroom Environment Inventory " (CUCEI) . This instrument was conceived to appraise students' or teachers' perceptions of the university level , with the reservation that its use was restricted to class groups of fewer than 30 students , approximately . The empirical research with the CUCEI is scarce , although it has already been applied in the United States and Australia (Dusche, Waxman and Morecock , 1986).

Purposes of Study

The types of hypothesis derived from instruments that follow a format with independent scales are varied.

While associations between environment and performance are most often researched, this does not exclude other perspectives , such as understanding environment as a criterion , or that students learn more in preferential environments , or that climate data are a source of feedback (Fraser, 1986 a and b).

Our fundamental objectives in this study were to design an instrument to measure classroom climate in Primary Teacher Training Colleges , describe College environment and compare classroom environment according to the variables selected .

The Problem

Consequently , we set out to find an answer to the following initial questions : the consistency of the instrument , the generic framework for deriving the elements of the instrument , and the psychometric characteristics of the questionnaire. After solving these problems , we began to contrast our experimental hypotheses, which included the comparison of Sevilla and Huelva (Spain) College classroom learning environments , and the discrimination of students according to certain variables.

Sample

The selection of the size of the sample was made on the basis of the total number of classrooms of each one of the three Primary Teacher Training Colleges in Sevilla and Huelva . The size of the sample was calculated by a procedure of ramdom stratified sampling described by Azorin (1972), and which includes the following equation:

$$n = \sum Wh\ Sn^2 \quad / \quad \frac{e^2}{K^2} + \sum Nh\ Sn^2$$

Applying this formula to the 21 classes of the Public Primary Teacher Training College of Sevilla , 17 classrooms were selected . Of these six were of the concentration on Science , four on Language , four on Preschool and three on Humanities. Five freshman classrooms were chosen , six sophomore , and six also of juniors in the Spanish three-year Program.

The Private Primary Teacher Training College in Seville consists of nine classes of which we selected seven. Three classrooms were of freshmen, two of sophomores , and two of juniors . As for their concentrations , three were on Humanities , two of Language , and two on Science .

In the case of the Primary Teacher Training College in Huelva , nine of this School's twelve classrooms were chosen . Three classrooms per year were selected , and the test was administered to two Science classrooms, three Preschool , two on Language and two on Human Sciences .

Procedure

The strategies for gathering items which we followd to develop the instrument were fundamentally ethnographical and of an interactive character. We are referring to participant observation and interviews with key informers. The identification process of basic statements for the evaluative system was completed with a review of empirical research and of scientific literature in the areas of teaching , school organization and social psychology. We paid more attention to ethnographic sources , from among the lines of investigation selected. We established a seminar with Sevilla Primary Teacher Training College professors , and another with students from the School of Education of the University of Sevilla.

The interviews were of semi-structured nature , and for our purpose , we adapted the integration plan suggested by Patton (1983), which consisted of six basic question modes : on experiences or behavior, of opinion or value , of feelings , knowledge , sensory and demographic or biographical. The interviewers were professors participating in the seminar, who selected the teachers to be interviewed on the basis of certain characteristics , such as the diversity of areas of knowledge , length of time spent working at the School,etc.In the same way , the School of Education students who observed teachers selected the students who were interviewed. There were more than 40 interviews of teachers and students. These interviews were then transcribed and a group of students working on the research project used the written documents to compose statements on environment that reflected the interviewees' perceptions on the educational climate .

For the participant observation , we followed the recommendations given by Goetz and LeCompte (1984) , which we adapted to the purposes of our project . Thus , the questions Who , What , Where, When , How and Why were to serve as an orientation for School of Education students on the environmental phenomena they had to describe in their observation protocols. The professors were members of the seminar , and the university students spent three sessions in their classes . After each class hour, the observer and the professor exchanged impressions on the notes drawn up. These observation sessions were finally completed with student-student interviews.

Validation of the Instrument

With the data collected , we proceeded to describe environmental characteristics , obtaining 688 statements or items. This number was far too high for any evaluative system. Consequently , we went on to reduce it to a significantly lower one , by selecting 15 dimensions of educational climate based on the research literature on university environment, as well as teacher traininig bibliography . The dimensions were as follows: Interpersonal Relationships, Research and Innovation , Norms , Attitudes , Feedback and Reinforcement , Classroom Management , Motivation , Evaluation , Values , Decision-Making , Activities , Learning Style , Teaching Quality , Media and Resources, and Professionalization.

Then we established five pairs of judges , made up of Teacher Training College professors and seminar participants , who developed the activity of ascribing the 688 items to three dimensions randomly given to each couple . All the items ascribed to one particular dimension were selected and ranked in order of the importance attributed to them. Thus , 132 items were ascribed to 14 dimensions , discarding the subscale Professionalization on which there were no statements. The dimension of highest saturation was class management with 27 items , while Teaching Quality and Values only had one item each.

The items which the pair of judges univocally selected for each dimension and which were not in any other , entered into the first version of the instrument, made up of 132 items and administered to 302 students at Sevilla's Public Primary Teacher Training College. The students measured the degree to which an item or element conformed to an Inventory of Teacher Training College environment , answering on a five-point scale . The answers were processed by means of two statistical packages : factor analysis and cluster analysis.

The statistical package BMDP4M was applied to perform the factor analysis. The 132 items were distributed among 35 factors, although one of them alone (Factor I)has aneigenvalue of 28.904 and groups 53 items , while Factor II has an eigenvalue of 4.349 and only 9 elements. This same number of items makes up Factor IV , with an eigenvalue of 4.051 . The rest of the factors show values between 2.413 and 1.373 and include one or two items each. We selected those items of each factor with weights over .500 , so there were 105 items selected.

The cluster analysis was performed through the statistical package BMD P1M . The result grouped the 132 items into seven bunches or clusters , representing minimum amalgamation distances between 94 of them. Comparing both results we adopted the decision to choose 81 statements.

Our study of the 81-item version of the questionnaire sought a double objective : to select the final number of items on the inventory and to determine the structure of its dimensions or subscales.

The selection of the definitive items of the instrument was carried out on the basis of the homogeneity of the answers given by 84 professors from ten Primary Teacher Training Colleges (Santiago de Compostela, La Coruña , Vigo , Orense , Pontevedra , Lugo , Bilbao , Granada , Melilla and Sevilla), and 302 Primary Teacher Training College students in Sevilla . The answers were again analyzed through two statistical packages: factor and cluster analyses . The common items in both types of analysis formed a group of 57 statements. To ascribe the statements to dimensions or subscales , we again interpreted the factors or clusters obtained , following the procedure below.

In the first place , we considered the degree of saturation of each item within the first factor , for professors as well as students. In this way , we grouped all the items of the first factor into one dimension. Secondly , we studied the minimum amalgamation distances between all the items gathered into one same cluster , for professors and students. Thus, the items which appeared grouped in the same clusters and which , in turn , confirmed their belonging to one same factor were linked to one same dimension or subscale . In this second stage , we selected 21 items grouped into seven dimensions . Third , we completed the dimensions that had been formed, by adding those elements which , in the analysis of teacher or student clusters appeared to form one large cluster that confirmed the corresponding factor . At the end of this phase , the number of items had risen to 41.

The items of the third dimension were grouped among one another at a higher minimum amalgamation distance than the previous clusters. The same thing ocurred with some of the items in other dimensions. Consequently, we decided to raise the number of items of each subscale with those statements of greater saturation within the factor analysis of the professors' answers. (The professors' answers were the most representative , as the factor analysis of the students' answers was only based on the first three factors with an eigenvalue of 22.549). Having made this decision , the number of items now making up the eight provisional dimensions was 57 .

These eight dimensions showed an unequal distribution of items in each one . Four of them presented seven items , two subscales , six statements each. There was one dimension that had nine items , and another eight. To balance the number of items per dimension , we adopted the heuristic decision to include seven items per scale , leaving the final inventory of 49 statements grouped into seven dimensions.

Forms of the final version of the questionnaire

The third and last version of the inventory is made up of 49 elements and seven dimensions , which are the following : COHESIVENESS , SATISFACTION, PERSONALIZATION , TASK ORIENTATION , INNOVATION , EVALUATION and CLASSROOM MANAGEMENT . Two formats were also designed for the questionnaire, depending on whether the "real" classroom environment or the "ideal" environment was to be measured . As examples , we shall describe two elements (from the real and ideal versions) of the dimensions " Cohesiveness" and "Satisfaction":

Cohesiveness Nº 1. "There is a trusting relationship among most members of this class"(real version).
"There should be a trusting relationship among most members of this class"(ideal version).

Satisfaction Nº 2."In this class, the students think the program is significant for their future needs"(real version).
"In this class , the students would feel the program to be significant for their future needs"(ideal version).

Once the instrument was designed , we did a pilot test with students of the two Teacher Training Colleges of Sevilla and Huelva , professors of the Sevilla Public Primary Teacher Training College and students of the School of Education who had participated in the process as observers, in order to determine the final validity of the instrument, as well as to calculate the size of the sample of classrooms to whom the questionnaire should be administered.

Description of the IUCE

The instrument is called "Inventory of University Classroom Environment".

The environment as a construct of multiple traits was summarized in seven independent indicators which would become the foundations for proposing hypotheses and , finally , for comparing environments , which is the second object of our study. Before discussing this last purpose , however, let us add a few clarifying notes on the environmental dimensions of the IUCE .

Figure Nº 1 shows the seven scales of the IUCE , their relationship with Moos categories, the definition we have given the scales and an

item example with its (positive or negative) value. As the instrument has 49 questions , and due to its internal balance , each scale includes seven statements . The items come in cyclical order , in blocks of seven . This way, for example , items of Cohesiveness are found at numbers 1,8,15,22,29, 36 and 43 . The scale of Satisfaction begins with numbers 2,9,16, etc. , and following these cycles we can see the rest of the items in the scale series. The value assigned to the items is a heuristic average based on the percentage of answers given on an item by the pilot sample , and aims to avoid bias in the answers. On this point , other authors have proceeded in the same way (see Fraser, 1986, a and b). We present the real version and the answer sheet of the IUCE in the Appendix.

The two versions of the system make it possible to state hypotheses on person-environment adjustments, on the degree of congruence which exists in the climate of a class in order to improve it (Fraser, 1986 a and b) , or on the evaluation of the curriculum (Weirstra, Jörg and Wubbels, 1986).

RESULTS

Discussion

Means and Standard Deviations. In tables 1 and 2 we show the basic descriptive statistics of the real and ideal versions of the IUCE for the three Colleges we studied. In figures 2 and 3 based on the data of the tables , certain differences are observed in the average evaluations given by the students . Let us look at the profiles .

(Insert tables 1 and 2 and figures 2 and 3 here)

The values of the mean scores of the ideal IUCE appear more grouped by scales than in the real IUCE . The ideal profiles are more congruous with one another , which suggest that students at the three Colleges have similar feelings as to what the class environment should be like . While the profiles in the real IUCE show similar tendencies , they are not so grouped , as the Sevilla Private College evaluations are more clearly set apart.

In the ideal profile , the highest peak corresponds to Innovation and the deepest points of the curves belong to Satisfaction and Evaluation. This sharp profile is not the case in the figure of the real IUCE , where the dimensions Cohesiveness and Personalization are the high peaks , and Task Orientation the lowest ones. It is noteworthy that the higher values for Cohesiveness , Personalization and Evaluation in the real IUCE at least partially reflect some indicative traits of the character of the Private College .

The sharp, low real perception of Task Orientation by the Sevilla and Huelva Public College students equally attracts our attention. This dimension is characterized by items which have , among others , the following pronouncements : " The students make decisions and are responsible for class norms", "In this class , examples that show reality are included through different media (video, films, etc.)",etc. Finally , an interpretation that can be given of the extreme values for Satisfaction and Innovation in the ideal profile is that scores of four items of Satisfaction are inversely corrected (the items have negative values).

Factor and Cluster Analyses of the IUCE

Student response to the IUCE allowed us to contrast the validity of the inclusion of the items in seven dimensions. By means of varimax solution of factor analysis , we obtained a grouping of statements on environment into ten factors , as much in the real version as in the ideal version of the IUCE (N = 1.145).

In the real version , the item distribution confirmed four of the hypothetical dimensions established in the instrument. Factor I more than justified the formation of two subscales : Classroom Management and Evaluation. In both cases we find saturations that represent five of the seven items which make up each dimension of the IUCE . Factor II also confirms the structure of other subscales : Satisfaction and Personalization. At one extreme , we see saturations of five items of the subscale Satisfaction, while at the other , four items of the subscale Personalization are shown (see Table 3) . Some of these dimensions - specifically , Evaluation and Satisfaction - appear well represented in other factors as well. This is why there are five items of Evaluation in Factor III and four items of the subscale Satisfaction in Factor IV. The rest of the dimensions are totally dispersed , represented by one or two items in each factor .

In the ideal version , the IUCE configuration by dimensions was even more strongly confirmed . All the instrument subscales appear represented in three of the ten factors extracted . Factor I gathers saturations of the subscales Task Orientation and Cohesiveness for three items of each one.Factor II also shows representative values for items of the subscales Evaluation, Classroom Management , Personalization and Innovation. And Factor V collects items of the subscale Satisfaction. The rest of the factors show saturations of one or two items per subscale (see Table 4) .

Contrasting the results of both analyses , we may find that some dimensions appear confirmed as much in the real version as in the ideal version of the IUCE . This is the case of the subscales Evaluation , Satisfaction, Classroom Management and Personalization , which also present from three to six items with saturations per factor , in either version of the IUCE . In summary, we can state that the structure we propose for our instrument seems adequate for reflecting different perceptions or dimensions of the University environment.

Cluster analysis applied to student responses to the IUCE added fewer elements for validation of the hypothesis on IUCE statement distribution into subscales . In this case , it is possible to extract bunches or clusters that include those items of stronger relationships ; that is , those of shorter amalgamation distances .

Figure 4 shows the dendogram resulting from analysis of the items in the real version. Here , the presence of four clusters is confirmed. The first one is developed around items 45 and 44, joined at a distance of 31.0, with nine enviromental statements. Of these nine statements, four belong to the subscale Personalization while the rest are distributed among all the other subscales. The second cluster comprises a total of 19 items which represent the subscales Innovation (with five items grouped in the cluster), Task Orientation , Evaluation , and Personalization , again (with four items each in this cluster). In cluster 3 , there are only three items that all belong to the subscale Cohesiveness . The last of the clusters we considered associates five items , three of which fall under the subscale Classroom Management .

The result of cluster analysis of the students' scores on the ideal version of the IUCE represented in Figure 5 shows us two basic bunches or clusters . The first one groups 19 items within five subscales : Innovation (6 items) , Satisfaction and Personalization with four items each in the cluster , and Evaluation and Task Orientation (three items) . The second cluster takes in 12 items which , in our instrument , appear distributed in two subscales : Cohesiveness and Evaluation, with three items each , while the rest of the statements are parcelled out among all the other subscales, with one or two items each .

Cluster analysis allows us to confirm the existence of certain dimensions which are adequately represented in the two versions of the IUCE. Thus we arrive at the subscales Innovation, Cohesiveness , Evaluation , Personalization and Task Orientation .

Validation of the IUCE

Internal Consistency Reliability. Estimates of the internal consistency of the two forms of each IUCE dimension were calculated using Cronbach's alpha coefficient . In tables 5 and 6 , values obtained for the alpha coefficient for each subscale are shown separately for each form of the IUCE being the individual the unit of statistical analysis . These values suggest that each IUCE scale has acceptable internal consistency for use in each of its two forms.

Scale Intercorrelations. In our study we have found 42 matrices of correlations between subscales , as functions of the College (Public or Private in Sevilla, and Huelva), concentration (Preschool , Language , Science and Humanities, in the case of the two Public Colleges . In the Sevilla Private College , the Preschool concentration was not offered), academic year (Freshman , Sophomore or Junior of the Spanish three-year program) , and version (real or ideal) of the instrument .

In this paper we only include the general correlations of the subscales for the real and ideal versions of the IUCE . As general characteristics, values are noticeably moderate in the real version and low in the ideal version, and the subscale Classroom Management is negatively correlated to the others in the real version . In the real version , the subscale Cohesiveness is correlated with medium intensity to Personalization (.57) , which is the highest value of the correlations between that subscale and the other ones, while Management has the weakest correlation (-.30). The strongest correlation of Satisfaction is to Personalization (.63), and the weakest to Classroom Management(-.33). We may observe that the strongest correlations in this version are found between the values .5 and .6 . On the other hand , the highest value between subscales on the ideal version is .43 (Personalization and Innovation), and the lowest value is given by the correlation of the subscales Evaluation and Management (-.01) . (See tables 7 and 8) .

One-Way ANOVA. To begin with a hypothesis , we state that the IUCE's subscales discriminate among the 30 classrooms with students of different educational levels, different concentrations , and different Colleges in each of the two versions of the IUCE . The statistical package we used to contrast the data was BMDP7M . In the one-way ANOVA test we refuse H_0 (there is no difference between the k levels considered) for a α value selected when the F value obtained is greater or equal to the theoretical value of F .

In tables 9 and 10 , values of F are offered which were obtained by the 30 classes analyzed in the seven subscales for each version of the IUCE , also indicating the critical values of F for the probabilities .05 and .01 . As we observe in Table 9 (IUCE , real version), the values obtained for F in all the subscales are higher than the theoretical values. However , the values reached for F have varied considerably in the IUCE subscales for the ideal version , although there are significant differences among the 30 classrooms on all the subscales with respect to the two levels of significance , α selected from .05 to .01 . Each scale significantly differen iated between the two.

Therefore , another desirable characteristic of the real and ideal versions of the IUCE is for it to be able to distinguish between the perceptions of students from different classrooms. This characteristic was explored for each scale of the two versions of the IUCE , using the sample of 1145 students.

The values of the statistic eta^2 for each version of the IUCE are represented in tables 11 and 12 . This statistic , which is an estimator of the amount of variance between IUCE scores attributed to the difference between classes , shows these scores varying from .22 for Management to .42 for Evaluation in the real version , and for .03 for Management and .44 for Cohesiveness in the ideal version.

Discriminant analysis. Study of the psycho-social perceptions of students at Primary Teacher Training Colleges includes the possibility of classifying those perceptions according to whether they refflect a real or ideal interpretation of University environment . A discriminant analysis of students' scores on the IUCE may shed some light on this matter.

The procedure we used for our discriminant analysis was a stepwise one , by which each of the IUCE subscales was chosen at each step according to its greater power to discriminate between both versions (real and ideal) of this instrument. This method was applied to IUCE scores given by Sevilla's Public Primary Teacher Training College students, by the Private College's students, and by the Huelva Public College students. To calculate these analyses, we used program 7M of the statistical package BMDP.

Discriminant analysis of the Huelva College students' perceptions selected the subscale Task Orientation as that of greater distance between the seven dimensions which make up the IUCE . According to the data in table 13 , this subscale obtained a greater difference in the F statistic (1018.960) than the rest of the subscales . The second dimension selected was Classroom

Management with an F value of 203.373 . All the subscales discriminate between the real and ideal versions of the IUCE except Evaluation and Satisfaction . The discriminant classification of the dimensions in one version of the instrument indicates that all of them except Personalization are present in the ideal version. (See Table 13).

The discriminant analysis of the Sevilla public Primary Teacher Training College students' perceptions chose the dimension Innovation as that which establishes a greater difference between the real and ideal versions of the IUCE . Its F value (1742.988) is the greatest of all those obtained by any of the variables or subscales selected as discriminants (see Table 14). This table reveals that every dimension except Cohesiveness discriminates between the two versions of the IUCE . The six discriminant variables are distributed by equal number in each of these versions . The varibles with higher F values are found in the ideal version and by contrast , those of lower F values appear in the real version .

Discriminant analysis of the Sevilla Private Primary Teacher Training College students' perceptions confirmed some of the previous study's findings. Here again , the variable selected as the most discriminant one between the two versions of the IUCE is Innovation . It is also followed by the subscale Classroom Management with a higher F value . However , in this analysis , all the IUCE's dimensions are discriminant , to a greater or lesser extent , of students' actual or preferred perceptions , as Table 15 shows.

The assignment of these seven subscales to one of the versions we considered determines that the lower F values fall into the real version: Personalization , Evaluation , Satisfaction, while the higher values are for the ideal version subscales , that is , Innovation , Classroom Management, Cohesiveness and Task Orientation .

Conclusion

This paper has shown the design, validation and uses given to the scale "Inventory of University Classroom Environment" (IUCE) in three Colleges of the University of Sevilla . IUCE evaluates seven dimensions of the real and ideal classroom environment in 49 items . The preliminary information shows the validity of the instrument with respect to internal consistency reliability, discriminant validity , ability to differentiate between classrooms,

and ability to discriminate among students.

Our research project also shows the correspondence between the instrument's statistical and logical structure , the differences in students' perceptions of real and ideal classroom environment , and proposes a way of using the enviromental evaluations to try to improve classroom climate .

The IUCE may be applied to future research that evaluates University teaching environment . We can also measure types of associations between the environment - or some of its dimensions - and student outcomes (Villar,1987).

Implications

The primary purpose we give the use of instruments for evaluating classroom environment is clearly aimed at training. The systems we used for the diagnostic evaluation are classroom profiles , which are easily read and interpreted by class members . Under these circumstances, different self-improvement strategies might be favored , as the goals of a good environment are well known . In general terms , a good environment could be a profile with high indexes or peaks corresponding to dimensions which are positively and significantly correlated with student performance, and lower values or deeper curves of those subscales which are negatively and significatively associated with students' degree of learning .

The improvement tactics remind us of experimental research designs known as "single subject strategy " or " within subject replication strategy " because they respond to the paradigm of N = 1 . This is a time-series design, as is the training proposal we indicate . In fact , our suggestion takes several observations into consideration , with the same instrument in its two versions (real and ideal), which we call O_1 and O_2 . On the basis of the resulting profiles , we developed the instructional treatment (I_1), which consists of reducing the dissonance in widely distant dimensions , or in the polarization of attention in those subscales which , by the professor's agreement or acceptance of the evidence from the empirical research , would seem to need improvement . Later the real and ideal versions (O_3 and O_4) would be administered to test the effects of the treatment . This basic model O_1 O_2 O_3 O_4 could be intensified by adding new treatment sessions (I_2 I_3 ... I_n) as new real or ideal measurements were obtained for the class. It is obvious that the instructional session has the purpose of offering a feedback

aimed at achieving the teacher's perceptual harmony . Our approach is apparently more useful than , for example , the one recommended by Anderson, Kameen and Kegley (1986) , where the coding of events was sequential and supported by observational recordings (presence/absence) of phenomena . The IUCE's method is more useful because it does not require external observers but rather internal ones - the students themselves - and consequently , estimates that the subjects of a class have more faithful and stable perceptions of events than judges who only make one or two occasional visits to the class. The divergence of data collection procedures already marks a distinction in the possible meaningfulness of teacher development programs .

Training strategies also serve different purposes . Fraser (1986 b) points out a process which is fundamentally based on a test-reflection-retest cycle , as a primary unit of environmental comparison (correspondance within a class or between classes). We have developed this perspective elsewhere (Villar , 1987), although now we would like to envision a model of active decisions on classroom environment . Our model favors one to one or collegiate training , where couples of colleagues join together to give/receive feedback on the classroom climate profiles obtained by the same/different class of students. The teaching lectures or interviews act as actual clinically supervised encounters, or in other words , action reserch sessions , where colleagues make decisions in the light of their respective data . Now we suggest the implementation of miniprograms on classroom climate which , based on formative individualization and supported by relationships between colleagues , could provide means of professional development for Primary Teacher Training College professors.

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FIGURE Nº 1

DESCRIPTIVE INFORMATION OF THE "INVENTORY OF UNIVERSITY CLASSROOM ENVIRONMENT"

SCALE	MOOS' CATEGORY	DESCRIPTION	ITEM EXAMPLE AND SIGN
COHESIVENESS	Relation	Degree to which the student know each other and are friends among themselves	There is a trusting relationship among most members of this class(+)
SATISFACTION	Relation	Degree to which there is fun in classwork	In this class, the students notice that their ideas are listened to and used (-)
PERSONALIZATION	Relation	Degree to which the student is given opportunities to interact with the professor, and concern for the student's personal well-being	The professor trusts in the students' good judgement(+)
TASK ORIENTATION	Personal Development	Degree to which it is important to stay and complete the subject	In this class, school situations are simulated and their problems are solved (-)
INNOVATION	Change and System maintenance	Degree to which a professor plans new, infrequent and varied activities and techniques and encourages students to program and think creatively	In this class ,the students invent,create,and make things up with the tasks suggested by the professor (+)
EVALUATION	Change and System maintenance	Degree to which a professor makes student instrumental control rules explicit	In this class, the students are perfectly aware of the subject's objectives (-)
CLASSROOM MANAGEMENT	Change and System maintenance	Degree to which a professor orders,organizes and gives rules on class instruction	In this class,the professor always reports to the students on procedures which will help develop teaching (+)

INVENTORY OF UNIVERSITY CLASSROOM ENVIRONMENT (IUCE)

REAL VERSION

GENERAL OBSERVATIONS

This questionnaire contains sentences that could describe the psychosocial climate or environment in the classroom of this subject

This real version of the questionnaire evaluates your perceptions of the real environment which exists in the classroom of this subject

There are no "true" or "false" answers . We are only interested in your opinions

Each statement has four possible answers :

CA , if you COMPLETELY AGREE with the statement , and you feel it describes the real environment of this classroom

A , if you AGREE that the sentence describes the real environment of this classroom

D , if you DISAGREE that the sentence describes the real environment of this classroom

CD, if you COMPLETELY DISAGREE with the statement , and feel it in no way reflects the real classroom environment

Write your opinions with an X in the answer you have selected

Answer all the sentences on the ANSWER SHEET. Please do not write on this questionnaire

THANK YOU FOR YOUR COLLABORATION

INVENTORY OF UNIVERSITY CLASSROOM ENVIRONMENT (IUCE)

REAL VERSION

1.There is a trusting relationship among most members of this classroom
2. In this classroom , the students think the program is significant for their future needs
3. In this classroom, each student is allowed to work at his own speed
4. The students make decisions and are responsible for the class rules
5.In this classroom, the students solve (theoretical and practical) educational problems by themselves
6. In this classroom , the evaluation of our teaching-learning process allows discussion of teaching problems and their possible solutions
7. The relationships in the class are exclusively academic
8. In this classroom , the attitudes and understanding among members are more important than the development of the subject's contents
9. In general , there is considerable dissatisfaction with the work in this classroom
10. The professor speaks frankly and openly with the students
11. In this classroom , school situations are simulated and their problems are solved
12. In this classroom , the professor learns , to keep up to date
13. In this classroom , the students are perfectly aware of the subject's objectives
14. In this classroom, it is noticeable that the professor must rush to accomplish the requieremements imposed in the program
15. Before beginning the class, the professor takes a minute to talk informally with the students
16. In this classroom , the professor and students report on their respective performances
17. In this classroom , there is a large variety of textbooks on the subject being taught
18. This is a disorganized class (in the program and learning activities)
19. In this classroom , the students invent, create, and make things up with the tasks suggested by the professor
20. In this classroom, alternatives are suggested to accomplish the program's requirements
21. In this classroom, the professor monopolizes most of the verbal communication
22. The students in this class do not have sufficient contact among one another
23. In this classroom, the standards of classroom organization relate to the students' aspirations
24. The professor trusts in the students' good judgement
25. In this classroom, examples are included , through diverse media (video , film, et.) , that show reality
26. In this classroom , students research to solve matters that arise out of class discussion
27.In this classroom, professor and students plan and carry out changes
28. In this classroom , the content of the subject being taught is not presented in a logical way which tends to disconcert the students
29. In this classroom, there is an appreciable friendly relationship between the professor and the students
30. The students are enthusiastic about learning
31. In this classroom, new work methods arise out of the experience the students have of concrete alternatives
32. In this classroom, relationships are fostered with school teachers
33. In the classroom, students participate in research perojects directed by the teacher
34. In this classroom, students clearly know , from the beginning of the course what type of evaluation procedure the professor will use

35. *In this classroom, the professor always reports to the students on procedures which will help develop teaching*
36. *The students consider the class as a social place , where relationships among people are promoted*
37. *In this classroom, the course objectives are periodically revised and readapted*
38. *The professor stimulates the students to participate in the topic being taught*
39. *In this classroom, changes are made in the orientations recommended by the College or University*
40. *The professor promotes research on the topics dealt with in class*
41. *In this classroom, students perform self-evaluations*
42. *Besides reading no other activity is carried out in class*
43. *The students maintain a relatively cordial relationship in class*
44. *In this classroom, the students notice that their ideas are listened to and used*
45. *The professor is honestly concerned about the students*
46. *The students participate in non-academic activities*
47. *In this classroom, the professor and the students research educational situations with initiative and exploratory behavior*
48. *In this classroom, learning is demostrated in concrete situations and not in exam grades*
49. *In this classroom, the questions asked of the students provoke one-syllable answers*

TABLE Nº 1

SUBSCALE	COLLEGE	MEAN	STANDARD DEVIATION
COHESIVENESS		35.706	5.192
	SEVILLA (PUBLIC)	35.835	5.393
	SEVILLA (PRIVATE)	36.319	4.437
	HUELVA	34.847	5.289
SATISFACTION		33.204	5.219
	SEVILLA (PUBLIC)	32.833	5.327
	SEVILLA (PRIVATE)	35.165	4.488
	HUELVA	32.223	5.157
PERSONALIZATION		35.595	6.178
	SEVILLA (PUBLIC)	35.481	6.137
	SEVILLA (PRIVATE)	37.512	5.348
	HUELVA	34.073	6.532
TASK ORIENTATION		29.569	5.617
	SEVILLA (PUBLIC)	29.154	5.699
	SEVILLA (PRIVATE)	31.760	5.527
	HUELVA	28.474	4.957
INNOVATION		32.631	7.103
	SEVILLA (PUBLIC)	31.678	7.438
	SEVILLA (PRIVATE)	35.283	5.578
	HUELVA	32.299	7.005
EVALUATION		32.706	7.077
	SEVILLA (PUBLIC)	31.775	7.387
	SEVILLA (PRIVATE)	36.248	5.002
	HUELVA	31.518	6.968
CLASSROOM MANAGEMENT		31.328	5.358
	SEVILLA (PUBLIC)	32.250	5.295
	SEVILLA (PRIVATE)	30.083	4.780
	HUELVA	30.405	5.624

TABLE Nº 2

SUBSCALES	COLLEGE	MEAN	STANDARD DESVIATION
COHESIVENESS		40.049	4.324
	SEVILLA (PUBLIC)	38.878	3.926
	SEVILLA (PRIVATE)	42.035	4.741
	HUELVA	40.833	3.919
SATISFACTION		35.480	3.249
	SEVILLA (PUBLIC)	35.597	3.395
	SEVILLA (PRIVATE)	35.157	3.250
	HUELVA	35.516	2.885
PERSONALIZATION		38.506	3.682
	SEVILLA (PUBLIC)	38.595	3.811
	SEVILLA (PRIVATE)	37.917	3.699
	HUELVA	38.851	3.305
TASK ORIENTATION		39.780	3.619
	SEVILLA (PUBLIC)	39.881	3.711
	SEVILLA (PRIVATE)	39.504	3.588
	HUELVA	39.807	3.435
INNOVATION		47.395	5.850
	SEVILLA (PUBLIC)	47.811	6.044
	SEVILLA (PRIVATE)	46.350	5.873
	HUELVA	47.429	5.257
EVALUATION		35.649	3.476
	SEVILLA (PUBLIC)	35.738	3.544
	SEVILLA (PRIVATE)	35.004	3.696
	HUELVA	36.044	3.013
CLASSROOM MANAGEMENT		37.312	3.769
	SEVILLA (PUBLIC)	37.431	3.905
	SEVILLA (PRIVATE)	36.870	3.982
	HUELVA	37.455	3.196

FIGURE Nº 2 . IUCE (real version)

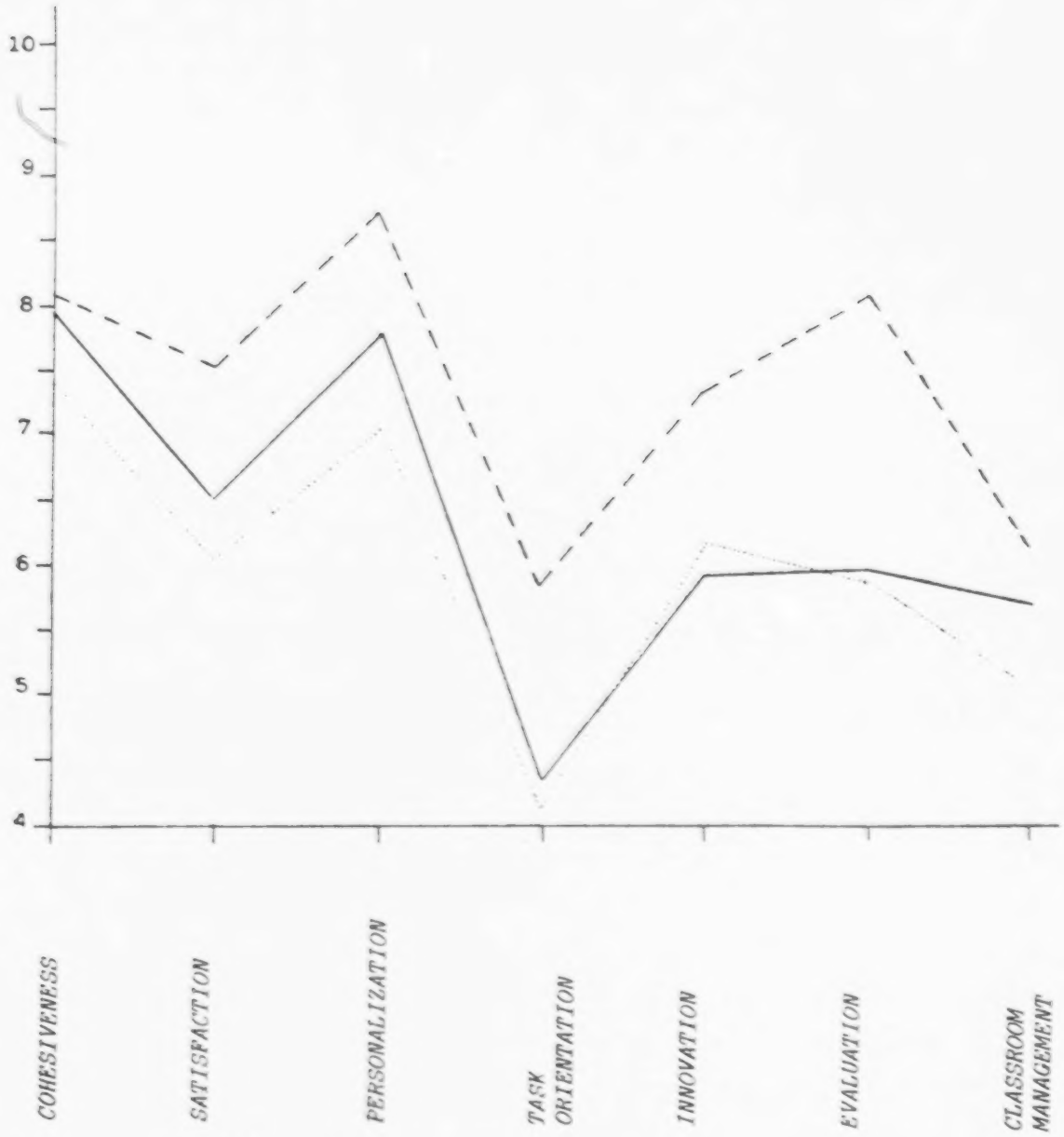

FIGURE Nº 3 . IUCE (ideal version)

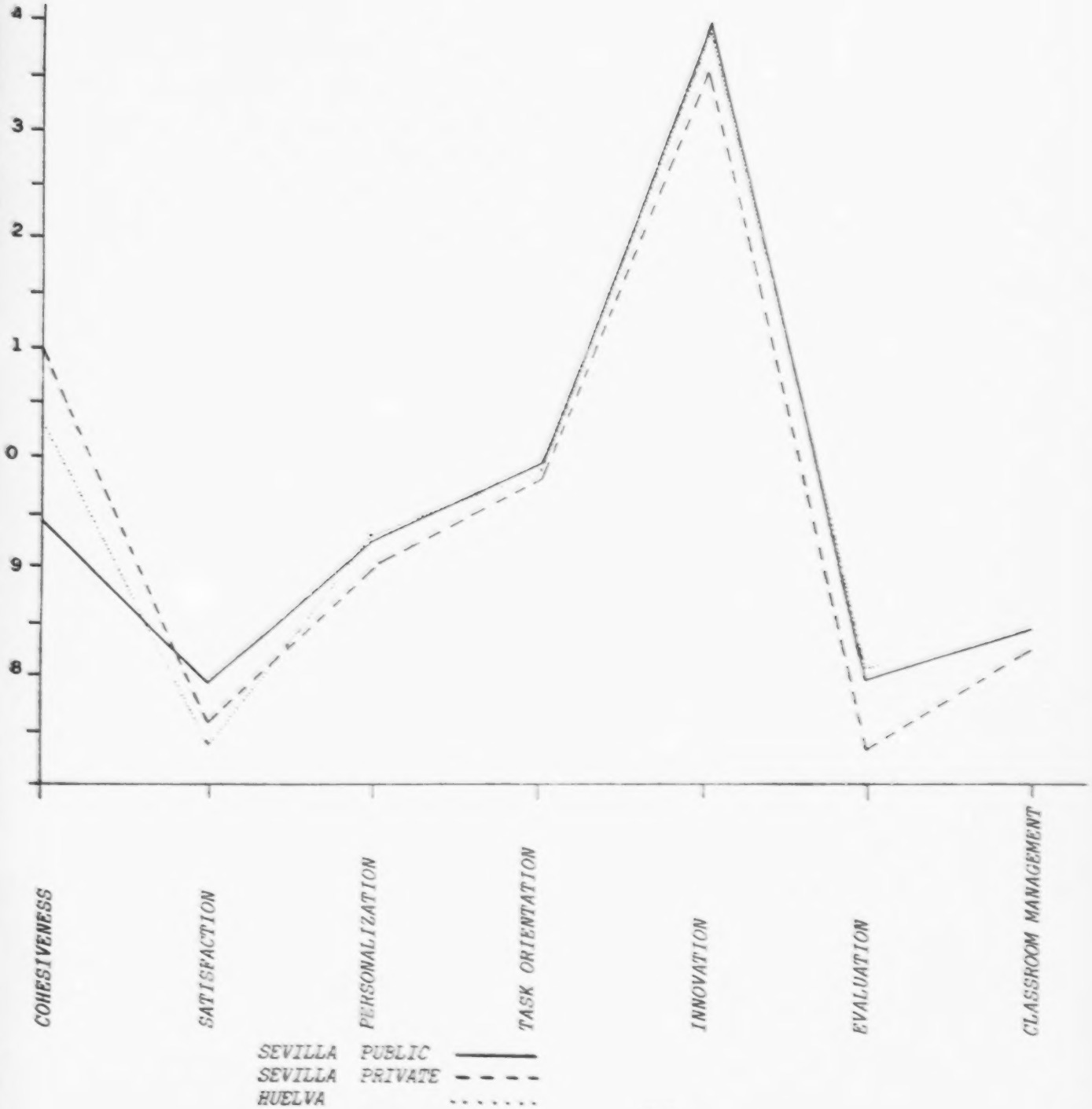

TABLE Nº 3 . IUCE (real version)

	FACTORS									
ITEMS	1	2	3	4	5	6	7	8	9	10
33	.633									
34	.611									
47	.608								.256	
42	.579									
32	.575						.286			
48	.537									
38	.527		.487							
49	.523									
40	.523									
28	.506									
30		.695								
11		.622								
16		.568								
46		.560						-.339		
25		.544			-.250					
12			.616				.260			
6			.589							
23				-.774						
2				.755			.372			
44		.254		.695						
37		.335		.591						
19					.742					
29					.710					
10		-.274			.527					
43						.629				
50						.583				
4							.670			
15								.660		
9		.259						-.551		
18									.703	
35										.746
20	.410		.348			-.355				
3		.355	.418		-.299					
31	.287	.446	.272		.328					
36	.284		.369		.266					
22						.476				
8				-.423				.485		
39		.426			-.281	-.338			.293	
14	.272		.256		-.444					.330
41	.398								.448	
5							.487			
26		.322	.406						-.307	
21	.448						.257			.264
45		.430				-.342				
24	.385									
13		.412	.327							
7			.481							
17	.306									
27	.483		.294					-.265	.252	.297
VP	5.106	3.726	2.697	2.551	2.470	2.129	1.687	1.617	1.505	1.413

TABLE Nº 4 . IUCE (ideal version)

	FACTORS									
ITEMS	1	2	3	4	5	6	7	8	9	10
25	-.695									
46	.683									
26	.682		-.324							
34	-.672	.370								
31	.666									
35	.660		-.374							-.299
44	-.657									
21	-.602	.331								
22	.550									.266
29	-.549									
41		.682							.467	
48		.618	.330			-.263				
18		.607		-.265					.261	
17		.564			.327					
20		.563								
33		.510	.329							
38		.505								.292
27		.504	.442							
45			-.746							
47		.333	.690							
36			.593							
30			-.562							
14			-.302	.626						-.294
13	-.386			-.566						
11				.523		.261				
9					.655					
8						.664				
10	-.315					-.537				
4							.784			
2								.780		
19									.696	
37		.251			.284					.565
16				-.420	.448					
28		.425						-.289		
6		.324		-.251		-.254	.257	-.333		
24		.298			.277			-.294		
32		.341	.447		.338					
23			.337		.273					
39		.389							.320	
40	-.401									
1		.318					.390			
42					.473		.426			
43			.261						.476	
7		-.305		.452				.281		
5		.322		-.293			.394	-.300		
3				.352		.353		.266		
15	.456									
12	.405			.384						
49		.463			.350					
VP	5.462	4.632	3.364	2.513	1.926	1.643	1.534	1.470	1.462	1.272

FIGURE Nº 4 . IUCE (real version)

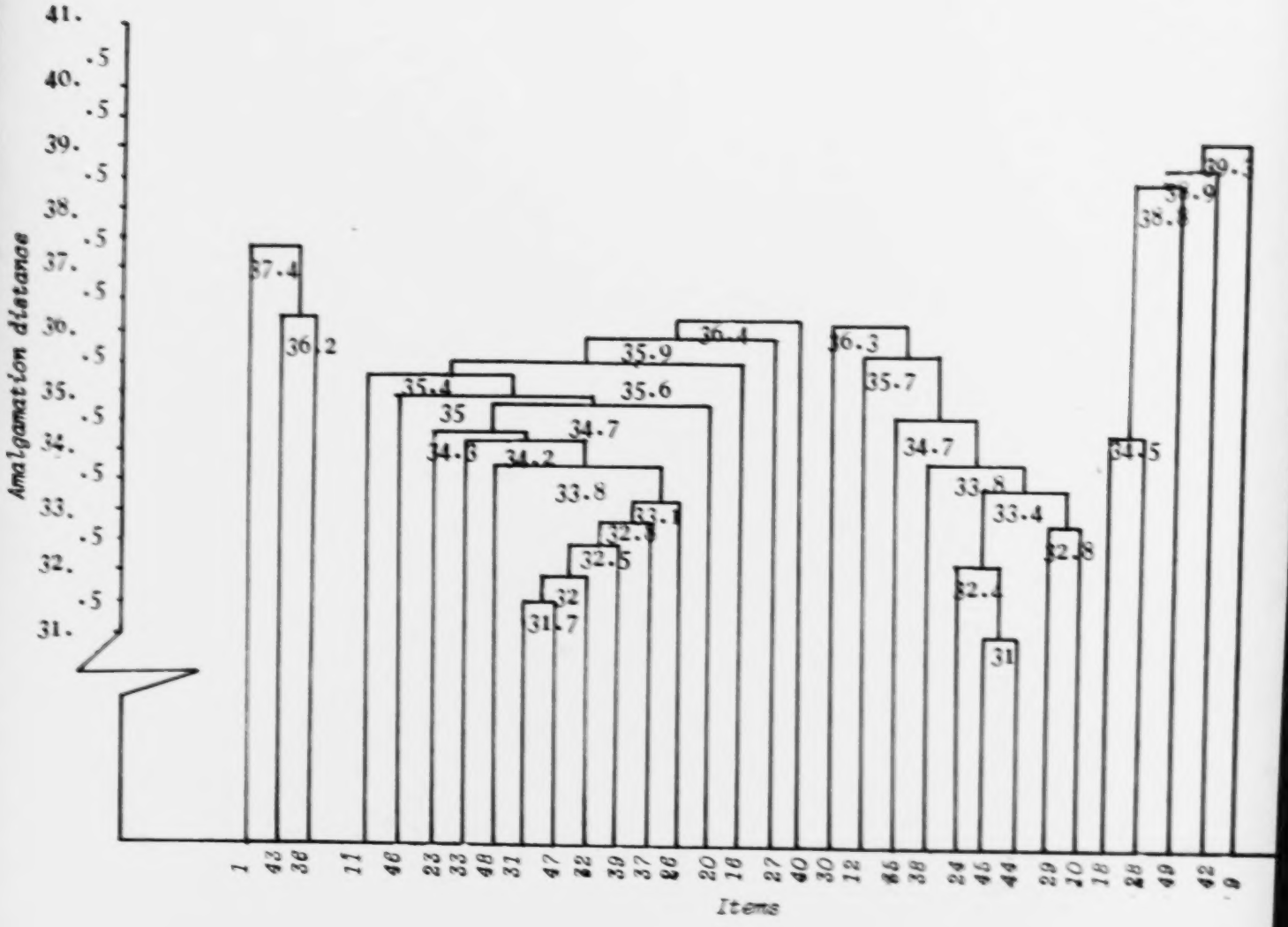

FIGURE Nº 5. IUCE (ideal version)

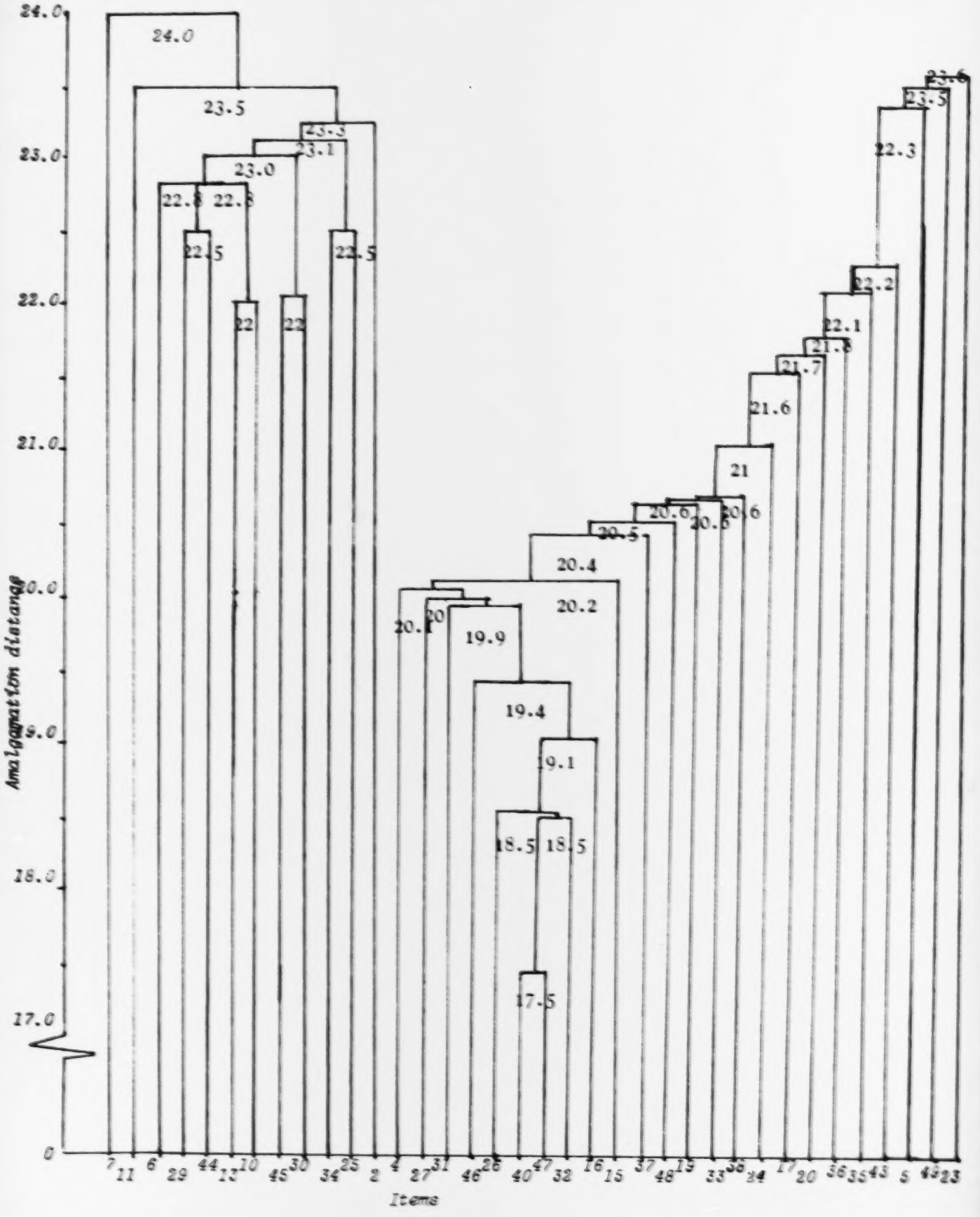

TABLE Nº 5. IUCE (real version)

SUBSCALES	ALPHA COEFFICIENT
COHESIVENESS	0.8220
SATISFACTION	0.8015
PERSONALIZATION	0.8220
ORIENTATION	0.7696
INNOVATION	0.6349
EVALUATION	0.8238
CLASSROOM MANAGEMENT	0.7768

TABLE Nº 6 . IUCE (ideal version)

SUBSCALES	ALPHA COEFFICIENT
COHESIVENESS	0.7710
SATISFACTION	0.8133
PERSONALIZATION	0.8134
ORIENTATION	0.8277
INNOVATION	0.8524
EVALUATION	0.8129
CLASSROOM MANAGEMENT	0.8147

TABLE Nº 7. IUCE (Real Version) Scale Intercorrelations

		COHESIVE. 2	SATISFAC. 3	PERSONAL. 4	TASK ORIENT. 5	INNOVAT. 6	EVALUAT. 7	MANAGEM. 8
COHESIVE.	2	---						
SATISFAC.	3	o.4876	---					
PERSONAL.	4	0.5722	0.6336	---				
TASK ORI.	5	0.3750	0.5190	0.4848	----			
INNOVAT.	6	0.3519	0.6242	0.6063	0.5866	----		
EVALUAT.	7	0.4178	0.6327	0.6263	0.5463	0.6670	----	
MANAGEM.	8	- 0.3041	-0.3392	-0.3851	-0.1660	-0.3242	-0.3714	----

TABLE Nº 8. IUCE (Ideal Version) Scale Intercorrelations

	COHESIVE. 2	SATISFAC. 3	PERSONAL. 4	TASK ORIENT. 5	INNOVAT. 6	EVALUAT. 7	MANAGEM. 8
COHESIVE. 2	----						
SATISFAC. 3	0.1363	---					
PERSONAL. 4	0.1753	0.2346	----				
TASK ORI. 5	0.0932	0.1909	0.3036	----			
INNOVAT. 6	0.3156	0.1936	0.4367	0.2712	----		
EVALUAT. 7	0.0395	0.2278	0.2062	0.1943	0.1625	----	
MANAGEM. 8	-0.0410	0.0257	0.1064	0.1531	0.0606	-0.0165	----

TABLE Nº 9. IUCE (real version)

Source	SS	df	MS	F
		COHESIVENESS		
Between groups	9153.4775	29	315.6371	16.23
Within groups	21690.3351	1115	19.4532	
Total	30843.8125	1144		
		SATISFACTION		
Between groups	10698.1016	29	375.7966	20.68
Within groups	26386.4984	1115	25.4587	
Total	43659.9727	1144		
		TASK ORIENTATION		
Between groups	14450.5479	29	498.2947	25.66
Within groups	21648.1840	1115	19.4154	
Total	36098.7305	1144		
		INNOVATION		
Between groups	23003.3516	29	793.2190	25.48
Within groups	34709.1187	1115	31.1293	
Total	57303.8125	1144		
		EVALUATION		
Between groups	24631.6758	29	849.3681	28.99
Within groups	32672.1367	1115	29.3024	
Total	57303.8125	1144		
		CLASSROOM MANAGEMENT		
Between groups	7451.1636	29	256.9367	11.28
Within groups	25389.0204	1115	22.7704	
Total	32840.1836	1144		

F (29,1115,.05) = 1.52

F (29,1144,.01) = 1.79

TABLE Nº 10 . IUCE (ideal version)

Source	SS	df	MS	F
		COHESIVENESS		
Between groups	5415.9790	29	186.7579	13.04
Within groups	15959.2600	1114	14.3261	
Total	12132.1885	1143		
		SATISFACTION		
Between groups	758.2913	29	26.1480	2.58
Within groups	11305.2465	1114	10.1483	
Total	12063.5381	1143		
		PERSONALIZATION		
Between groups	1932.3478	29	66.6327	5.47
Within groups	13563.6095	1114	12.1756	
Total	15495.9570	1143		
		TASK ORIENTATION		
Between groups	1166.8905	29	40.2376	3.25
Within groups	13803.5990	1114	12.3910	
Total	14970.4893	1143		
		INNOVATION		
Between groups	2898.9026	29	99.9622	3.07
Within groups	36214.5102	1114	32.5085	
Total	39113.4141	1143		
		EVALUATION		
Between groups	1550.6599	29	53.4710	4.86
Within groups	12260.0776	1114	11.0055	
Total	13810.7373	1143		
		CLASSROOM MANAGEMENT		
Between groups	518.3263	29	17.8733	1.27
Within groups	15719.2673	1114	14.1107	
Total	16237.5938	1143		

$F(29,1115,.05) = 1.52$

$F(29,1114,.01) = 1.79$

TABLE Nº 11 . IUCE (real version)

SUBSCALES	Eta^2
COHESIVENESS	0.296
SATISFACTION	0.349
PERSONALIZATION	0.349
TASK ORIENTATION	0.400
INNOVATION	0.398
EVALUATION	0.429
CLASSROOM MANAGEMENT	0.226

TABLE Nº 12 . IUCE (ideal version)

SUBSCALES	Eta^2
COHESIVENESS	0.446
SATISFACTION	0.062
PERSONALIZATION	0.124
TASK ORIENTATION	0.079
INNOVATION	0.074
EVALUATION	0.112
CLASSROOM MANAGEMENT	0.031

TABLE Nº 13 . HUELVA College

STEP NUMBER	VARIABLES	F-VALUE	U STATISTIC	APPROXIMATE F-STATISTIC	df	
1	Orientation	1018.9599	0.3694	1018.960	1	597
2	Classroom manag.	203.3725	0.2754	783.671	2	596
3	Innovation	126.2096	0.2272	674.436	3	595
4	Cohesiveness	11.7368	0.2228	517.889	4	594
5	Personalization	7.2002	0.2202	420.076	5	593

TABLE Nº 14. SEVILLA PUBLIC College

STEP NUMBER	VARIABLES	F-VALUE	U STATISTIC	APPROXIMATE F-STATISTIC	DF	
1	Innovation	1742.9886	0.4137	1742.989	1	1230
2	Classroom manag.	311.0926	0.3302	1246.751	2	1229
3	Orientation	142.7395	0.2958	974.605	3	1228
4	Personalization	84.3396	0.2768	801.646	4	1227
5	Evaluation	25.1199	0.2712	658.947	5	1226
6	Satisfaction	7.5817	0.2695	553.334	6	1225

TABLE Nº 15. SEVILLA PRIVATE College

STEP NUMBER	VARIABLES	F-VALUE	U STATISTIC	APPROXIMATE F-STATISTIC	DF	
1	Innovation	474.2074	0.5162	474.207	1	506
2	Classroom manag.	193.8389	0.3730	424.384	2	505
3	Cohesiveness	40.8039	0.3451	318.824	3	504
4	Personalization	42.4550	0.3182	269.400	4	503
5	Orientation	37.9033	0.2959	238.912	5	502
6	Evaluation	32.8125	0.2777	217.179	6	501
7	Satisfaction	10.3790	0.2721	191.121	7	500